DOCOMO Today

Welcoming the Olympics Year —Using Laws of Nature, Exploring Unknown Fields, Adopting Randomness and Orthogonality—



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Looking back to the past year when Japan experienced disasters of unprecedented proportions, I understand that we are all looking forward to this new year with a special sense of hope for peace and order for our nation. I extend my heartfelt sympathy to those who suffered from the disasters as I pray for a year that will be filled with good news.

It has been four years since the Beijing 2008 Olympics; this year, the 30th Summer Olympics will be held in London. I know that many of you will be watching and supporting games of athletes through the TV, Internet, mobile terminals and other media. In Japan, we have world-class athletes in the fields of judo, swimming, gymnastics, women's soccer and hammer throw, among others.

For its part, DOCOMO's R&D is also considered world-class in the mobile communication technological arena. Technology and sports are two widely different worlds, but they have certain points in common. Let me mention two of them.

First is that they both require the effective use of the laws of nature. In all sports events, athletes take advantage of gravity, fluid resistance and other laws of nature to win the game. Athletes and teams that more effectively use these laws towards their advantage have higher chances of winning, and we know this from our own experience. We know that going against the laws of nature is a futile exercise and that it certainly leads to defeat. Similarly, the effective use of the laws of nature is also essential in technology research and development. Article 2 of the Patent Act of Japan defines invention as "the highly advanced creation of technical ideas by which a law of nature is utilized." Making wise use of the laws of nature is the key in creating technologies that are low-cost and yet surpass existing functions and capabilities.

However, it is impossible for us to completely understand all the laws and principles of nature. In sports as well as in technology, there are still so many disciplines and wide areas that are governed by certain principles we still do not know.

This leads us to the second point common to both sports and technology, that is, the existence of vast areas and disciplines that remain unresolved. I believe that understanding how to delve into and discover new uses from these vast unexplored fields is imperative in becoming world-class both in sports and in technology. We have to rely on no one else but ourselves to uncover new ideas and uses from this vast world of tacit knowledge that is just waiting to be explored. I believe these areas need to be explored with a sense of conviction, perseverance, and courage and that they need to be approached with smart intelligence and continued determination.

The word "randomize" would probably bring to mind the idea of doing something different as much as possible or not repeating the same thing. It has a lot of connotations, but to stress my point, let me mention that there are many stories about how accidental mistakes have led to great historical discoveries. This point to the fact that randomness is an essential component in exploring unknown areas and disciplines. Approaching things randomly involves trying something that has never been tried before by making a ninety-degree turn when you come to a point where you are uncertain how to proceed, in what could be referred to as an "orthogonal trial and error" approach. In fact, randomization and orthogonalization methods are used in mobile communications technology and are highly reliable approaches for venturing into unknown fields.

To wrap up my message about using the laws of nature, about exploring unknown fields and about randomization, let me tell you something about the picture shown in this page. The background of the picture is the Beijing National Stadium nicknamed "The Bird's Nest," which was used as the main venue for the Beijing 2008 Olympics. It is famous for the random patterns of the silver steel frames, wherein no two frames have the same structure (Several times I have tried to look for frames that have similar structure and pattern, but I have not found any.) You can imagine that the randomness depicted here has something to do with the structural strength of the bird's nest. Learning from this principle, I hope that we can continue with our research and development activities for 2012 with a strong resolve to contribute to society, by laying the "eggs" of technology in the "bird's nest" of the laws of nature.